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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/339,818	06/25/1999	MARK E. DAVIS	038134-50010	3090
28120	7590	06/14/2005	EXAMINER	
FISH & NEAVE IP GROUP ROPES & GRAY LLP ONE INTERNATIONAL PLACE BOSTON, MA 02110-2624			CRANE, LAWRENCE E	
			ART UNIT	PAPER NUMBER
			1623	

DATE MAILED: 06/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/339,818

Applicant(s)

DAVIS ET AL.

Examiner

L. E. Crane

Art Unit

1623

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on March 21, 2005 (amdt).
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3, 6-10, 18, 24-26, 30-34, 44, 46 and 58-64 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 6-10, 18, 24-26, 30-34, 44, 46 and 58-64 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 May 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

9.0.0

No claims have been cancelled, claims **3, 59, 60, 62 and 63** have been amended, no further amendments to the disclosure have been submitted, and no additional new claims have been added as per the response filed by FAX on March 21, 2005. No additional Information Disclosure Statements (IDSs) have been submitted as of the mailing date of this Office action. The single reference supplied is a duplicate of PTO-892 reference **WB** (Hoffman, J. L.).

Claims **1-3, 6-10, 18, 24-26, 30-34, 44, 46 and 58-64** remain in the case.

Note to applicant: when a rejection refers to a claim **X** at line **y**, the line number “y” is determined from the claim as previously submitted by applicant in the most recent response including ~~lines deleted by line through~~.

Claims **1-3, 6-10, 18, 24-26, 30-34, 44, 46 and 58-64** are rejected under 35 U.S.C. §112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one of ordinary skill in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention; the scope is excessive in view of the disclosed exemplifications. **(SCOPE)**

The definitions of substituents in claims **1-3, 6-10, 18, 24-26, 30-34, 44, 46 and 58-64** are directed to a vast number of chemical compounds which have not been described in the instant disclosure in a manner permitting the ordinary practitioner to have the guidance necessary to make a very large proportion of the compounds encompassed. Examiner finds only **terminal diamino, terminal di-N-amido, terminal dicyclic-imino and terminal dimercapto linker compounds** incorporated into the oligocyclodextrin products provided in the “Examples” section and none of these compounds discloses a structure with any other type of linkage. Examiner respectfully suggests that this grounds of rejection may be obviated by defining the variable “A” with chemical structures in the independent claims by incorporation of the subject matter of appropriate dependent claims, with concomitant cancellation of claims which are no longer properly dependent. It is possible that amendments of the kind suggested would also obviate the art rejection and the rejection immediately following.

Applicant’s arguments with respect to claims **1-3, 6-10, 18, 24-26, 30-34, 44, 46 and 58-64** have been considered but are deemed to be moot in view of the new grounds of rejection.

Claims **1-2, 7-10, 18, 24-26, 31-34, 44, 46 and 58-64** are rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In each of claims **1-2, 7-10, 18, 24-26, 31-34, 44, 46 and 58-64** functional terminology is present which describes chemical functionalities of a “cyclodextrin”-containing species, a “comonomer A,” and the like, but fails to further define same in sufficient detail to permit one of ordinary skill to be able to determine the particular chemical species being referred to; a metes and bounds problem. For example, in claim **1** the terms “water soluble” and “linear” modify the term “cyclodextrin copolymer,” but fail to define what particular chemical functional groups and chemical linkages are present between the cyclodextrin and comonomer A. The chemical structure or structures of “comonomer A” is/are not defined in any way in claim **1**. In claim **24** precursors to the polymer are defined as being disubstituted (“cyclodextrin comonomer precursor”) and “comonomer A” is described as being “capable of displacing said leaving groups to form a linear cyclodextrin copolymer having repeating groups” Claim **25** defines the cyclodextrin reactant, but is incomplete for failure to define structural identity of the chemical crosslinkers (comonomer A) which are needed to produce the product. Claim **31** adds a “ligand” attachment step, but fails to define a chemical reagent for effecting such a step. Claim **32** narrows the subject matter slightly, but fails to define what “aminating reagent” or “reagents” are converting the di-iodocyclodextrins of claim **25** to “diamino” analogues. Claim **58** is directed to reacting a “cyclodextrin derivative modified to bear one reactive site at each of exactly two positions,” suggesting that either valence rules are being violated, or that applicant has not clearly described the subject matter. Similarly, claim **58** is directed to a “linker” which has “exactly two reactive moieties capable of forming a covalent bound with the reactive the reactive sites [of the cyclodextrin derivative] under polymerization conditions,” but has failed to define the chemical identity or identities of the “reactive moieties” or the particular “polymerization conditions” being referred to. See also claim **61**. See also compound claims **59, 60 and 62-64** which have the same or similar problems following from reliance on functional terminology.

Applicant’s arguments filed March 21, 2005 have been fully considered but they are not deemed to be persuasive.

Applicant has not elected to respond to the instant grounds of rejection. Therefore, said rejection has been maintained.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. §102 that form the basis for the rejections under this section made in this Office action:

“A person shall be entitled to a patent unless -

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.”

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.”

Claims 1-3, 7, 24-26, 31-33, 58-60 and 62-64 are rejected under 35 U.S.C. §102 (b) as being anticipated by **Toppan Printing Co. '194** (PTO-1449 ref. **BM**).

Applicant is referred to the noted reference wherein a large number of exemplifications disclose linear polymers of α -, β - and γ -cyclodextrins wherein cyclodextrin intermediates (some of which are very similar or identical to those disclosed herein) are converted into various enzyme-degradable polymers with urethane, urea, unsaturated ester, ester, carbonate, amide and sulfone linkages between the cyclodextrin units. The cyclodextrin polymer products are required to be linear by the protecting group strategy applied or by using bridged cyclodextrin precursors. See examples illustrated by oligomeric structures at pages 18-19, 27-29, 31-32 and 37-39. Note also that the proposed structures (only primary hydroxyl shown to react) do not exclude the possibility that the actual products produced result from reaction with primary **and/or** secondary cyclodextrin hydroxyls; e.g. boronic acids and aldehydes are both notoriously well known to form stable cyclic compounds with vicinal dihydroxy compounds (glycols), a functionality found only on the secondary (open) side of cyclodextrins. In addition, at page 26, lines 14-15, reference is made to “low-molecular weight oligomers” ... “extracted with hot ethanol,” a class of oligomeric compounds which are presumed to have some water solubility. And lastly, at page 8 of the ‘194 reference, applicant is referred to the conversion of compound “[6]” into compound “[B]” at lines 35-45 of column 2 and associated explanatory text as anticipating the cited method of making claims. Therefore, the cited reference is deemed anticipate both of the generic structures of instant claim 1 and methods of making same.

Applicant's arguments filed March 21, 2005 have been fully considered but they are not deemed to be persuasive.

Applicant's assertion of non-water solubility is not accompanied by any showing in the form of a declaration under 37 C.F.R. §1.132 which provides convincing experimental evidence that the assertion is factual. Applicant's assertion that "water solubility" is defined by whether a substance is dissolved by methanol is also unsubstantiated by any experimental showing(s) in a declaration. Applicant's argument is also premised on the assumption that solubility is only measurable at what appears to be room temperature, a clear misunderstanding particularly in light of the fact admitted by applicant that hot ethanol is an effective solvent. Examiner maintains that the limitations of the instant claims must be read broadly, which means that any degree of water solubility is sufficient. Because the compounds of the cited reference are soluble in hot ethanol, examiner concludes that some degree of water solubility is probable. And in view of the presence of oligocarbohydrate monomer units, this solubility may occur at low temperatures, the opposite of the high temperature/high solubility properties of many non-carbohydrate organic compounds.

Therefore, the instant grounds of rejection have been maintained.

Claims 1-3, 7, 58-60 and 62-64 are rejected under 35 U.S.C. §102(b) as being anticipated by **Uekama et al. (I)** (PTO-892 ref. ZA).

Applicant is requested to note the abstract at page 27 wherein water soluble polymers of all three common cyclodextrins and epichlorohydrin are disclosed. In addition, Table 1 at page 28 indicates average molecular weights for the copolymers which by their sizes require that a substantial proportion of the contents of what are mixtures must be linear copolymers; e.g. γ -CD-C3- γ -CD has a molecular weight slightly above 2600 which is just slightly below the overall average of 3000 listed for the mixture generated from contacting this cyclodextrin with epichlorohydrin.

Applicant's arguments filed March 21, 2005 have been fully considered but they are not deemed to be persuasive.

Applicant has invented a novel argument which relies almost entirely on unsubstantiated extrapolation. Examiner notes the contrast between applicant's statement that "... multiple

linkages [between cyclodextrin monomers] will not be the exception, but the rule,” and the complete absence of convincing analytical data disclosing the complete chemical structures of the products generated by the syntheses disclosed in the cited prior art. Applicant then cites precedents which applicant argues exclude the instant reference on the basis that even if a portion of the products of Uekama “accidentally and unwittingly” anticipate the instant claimed subject matter, a finding of anticipation is excluded because “the operators [in the prior art] were in pursuit of other and different results” This argument is misleading because it asserts that the Uekama reference only “accidentally” reads on the instant claims, when as noted above it is the instant claims which suffer from excessive scope as a consequence of applicant’s insistence on maintaining a functional definition for the variable “A.” Therefore, because of applicant’s inappropriate and/or incorrect treatment of assumptions as fact, examiner finds that applicant’s conclusion that the instant rejection “falls squarely within this analysis” to be unconvincing.

Examiner reaches an analogous conclusion *in re* the *Pfizer* precedent because again applicant is making assertions and reaching conclusions based on unsubstantiated assumptions concerning the populations of products actually present in the product mixtures disclosed in the instant prior art.

In re applicant’s assertions concerning claims **59, 60 and 62-63** applicant again argues based on assumptions about the product mixture but has provided no experimental data to support these assumptions. Therefore, this portion of applicant’s argument is also unconvincing.

For the above reasons, the instant grounds of rejection is deemed to remain valid and therefore has been maintained.

Claims **1-3, 7, 58-60 and 62-64** are rejected under 35 U.S.C. §102(b) as being anticipated by **Uekama et al. (II)** (PTO-892 ref. UB).

Applicant is referred to the Title, the Abstract, and the Results and Discussion section beginning at page 37 wherein the disclosed subject matter which anticipates the instant claimed subject matter is summarized and then described in detail.

Applicant's arguments filed March 21, 2005 have been fully considered but they are not deemed to be persuasive.

Applicant is referred to the response following the previous art rejection.

Claim **61** would be allowable if rewritten or amended to overcome the rejection under 35 U.S.C. §112 and redrafted to avoid the prior art of record.

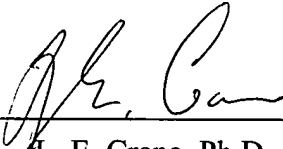
Papers related to this application may be submitted to Group 1600 via facsimile transmission (FAX). The transmission of such papers must conform with the notice published in the Official Gazette (1096 OG 30, November 15, 1989). The telephone number to FAX (unofficially) directly to Examiner's computer is 571-273-0651. The telephone number for sending an Official FAX to the PTO is 703-872-9306.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner L. E. Crane whose telephone number is **571-272-0651**. The examiner can normally be reached between 9:30 AM and 5:00 PM, Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. James O. Wilson, can be reached at **571-272-0661**.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group 1600 receptionist whose telephone number is **571-272-1600**.

LECrane:lec
06/08/2005



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